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A Comment on the Study of Skipjack Tuna Subpopulations by Morphometric Analysis

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At its April 1974 meeting in Tahiti, the South Pacific Commission's Expert Committee on Tropical Skipjack recommended that a regional study of skipjack tuna morphometrics be undertaken with the purpose of identifying and delineating subpopulations supporting the skipjack tuna fisheries in Tahiti, Papua New Guinea and Hawaii. The Honolulu Laboratory agreed to evaluate this proposal and to provide analytical services and guidelines for data collection in the event that the proposal was implemented.

We have reviewed the proposal in the light of the Committee's objectives and results of previous studies of skipjack tuna subpopulations in the Pacific. We recommend that the proposal not be adopted, and argue as follows:

The study would not add significantly to our understanding of skipjack tuna population structure. Virtually every study of tuna morphometrics has shown statistically significant differences between populations in different areas. In fact, W. F. Royce concluded that even with samples from closely related stocks, highly significant differences could always be found by increasing the size of the samples, by considering a larger set of characters or by applying more critical statistical tests. Since our natural assumption is that skipjack tuna stocks in the different regions are at least partly independent, a finding of significant differences in morphometrics would not be particularly revealing.

Further, a study of morphometrics cannot shed light on the key questions of stock or subpopulation interrelations, such as the presence of intermingling, the degree of intermingling, or the dynamics of interpopulation migration. These problems must be attacked directly, through such means as mark-and-recapture experiments. We note here that the most significant evidence concerning the interrelations between skipjack tuna in the Hawaiian and eastern Pacific fisheries has been the recapture in Hawaii of fish tagged in the eastern Pacific. The several studies of morphometrics contributed nothing to the elucidation of this issue.

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